Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-12-18-01** **Date: 21-12-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.
Agency	:	Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045
Customer's Reference	:	EE(Project)YnkZone/WO/75/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-12-17
Sample ID No	:	2017-12-18-01 /01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	19-12-17
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Asst. Executive Engineer
Project Division
Velahanka Zone
Bangalore

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	1.41	–
2	Finess by Air permeablity method (m^2/kg,Min)	298.6	225m^2/kg, Min
3	Density (gm/cc)	3.12	–
4	Standard Consistency (%)	29.0%	Not specified
5	Initial Setting time	155 minutes	Not less than 30 minutes
6	Final Setting time	265 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1.5mm	Not more than 10 mm

Note:

The results pertain to the samples received and tested.

All information furnished by Customer/Representative

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2017-12-18-01** **Date: 16-01-18**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.
Agency	:	Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045
Customer's Reference	:	EE(Project)YnkZone/WO/75/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-12-17
Sample ID No	:	2017-12-18-01 /01
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	19-12-17
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Asst. Executive Engineer, Project Division, Yelahanka Zone, Bangalore

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.5N/mm^2	Not less than 27 N/mm^2 -
2	7 Days	39.5N/mm^2	Not less than 37 N/mm^2
3	28 Days	58.5N/mm^2	Not less than 53 N/mm^2

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Quality Manager

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Format No: CP/TF/01

TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2017-12-18-01** **Date: 21-12-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.
Agency	:	Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045
Customer's Reference	:	EE(Project)YnkZone/WO/75/2017-18
Source of Sample	:	Sample supplied by Agency
Sample condition	:	Satisfactory
Date of Receipt	:	18-12-17
Sample ID No	:	2017-12-18-01 /02(a)
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	18-12-17

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	248	248	1.7	98.3	90-100
3	20 mm	7344	7592	50.6	49.4	30-70
4	10 mm	4735	12327	82.2	17.8	10-35
5	4.75 mm	2311	14638	97.6	2.4	0-5
6	Pan	362	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2017-12-18-01** **Date: 21-12-17**

Sample ID No : 2017-12-18-01 /02(a)

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	11.9	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	12.3	
3	Specific Gravity	2.67	_
4	Bulk Density(Loose) (Kg/l)	1.42	_
5	Bulk Density(Compacted) (Kg/l)	1.48	_
6	Water Absorption(%)	0.23	_

Note:

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Quality Manager

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2017-12-18-01** **Date: 20-12-17**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.
Agency	:	Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045
Customer Reference	:	EE(Project)YnkZone/WO/75/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	18-12-17
Sample ID No	:	2017-12-18-01 /02(b)
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	18-12-17

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	188	188	3.8	96.2	90-100
3	10 mm	2411	2599	52.0	48.0	25-55
4	4.75 mm	2148	4747	94.9	5.1	0-10
5	Pan	253	5000	100	0	–

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2017-12-18-01** **Date: 20-12-17**

Sample ID No : 2017-12-18-01 /02(b)

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	10.4	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.8	
3	Specific Gravity	2.63	–
4	Bulk Density(Loose) (Kg/l)	1.46	–
5	Bulk Density(Compacted) (Kg/l)	1.52	–
6	Water Absorption(%)	0.21	–
7	Aggregate crushing Value(%)	23.7	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	22.5	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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Quality Manager

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2017-12-18-01** **Date: 20-12-17**

Customer : Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.

Address : Project Sub Division, BBMP, Bangalore.

Project Name : Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.

Agency : Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045

Customer's Reference : EE(Project)YnkZone/WO/75/2017-18

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 18-12-17

Sample ID No : 2017-12-18-01 /03

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

AE

Date of test : 18-12-17

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	23	23	2.3	97.7	90-100	90-100	90-100	95-100
3	2.36 mm	107	130	13.0	87.0	60-95	75-100	85-100	95-100
4	1.18 mm	170	300	30.0	70.0	30-70	55-90	75-100	90-100
5	600 micron	225	525	52.5	47.5	15-34	35-59	60-79	80-100
6	300 micron	240	765	76.5	23.5	5-20	8-30	12-40	15-50
7	150 micron	170	935	93.5	6.5	0-10	0-10	0-10	0-15
8	Pan	65	1000	100.0	0.0	---	---	---	---

Result :The tested Sample Conforms to Grading Zone II

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2017-12-18-01**

Date: 20-12-17

Sample ID No : 2017-12-18-01 /03

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.53	–
2	Specific Gravity	2.57	–
3	Material finer than 75 micron(%)	4.8	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

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TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2018-02-05-01** **Date: 08-02-18**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.
Agency	:	Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045
Customer's Reference	:	EE(Project)YnkZone/WO/75/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-02-18
Sample ID No	:	2018-02-05-01 /01
Sample Type/Size	:	Solid concrete blocks of size (400X200X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	05-02-18

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	400	201	202	16241	32.480	1999.9	1989.2	Not less than 1800Kg/m^3
2	402	203	203	16566	32.550	1964.9		
3	401	201	202	16281	32.610	2002.9		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	33.590	32.310	3.96	3.82	Shall not be more than 10% by mass
2	33.470	32.280	3.69		
3	33.690	32.450	3.82		

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Lab ID : **CP-2018-02-05-01** **Date: 08-02-18**

Sample ID No : **2018-02-05-01 /01**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	402	203	201	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	401	201	200	
3	404	203	198	
4	403	201	203	
5	400	203	201	
6	401	201	203	
7	402	202	198	
8	401	200	201	
9	402	201	203	
10	402	203	202	
11	401	201	200	
12	403	203	199	
13	401	201	203	
14	402	200	200	
15	401	199	201	
16	402	201	203	
17	403	202	201	
18	400	203	203	
19	401	201	201	
20	402	203	202	
Average of 20	**402**	**202**	**201**	

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Lab ID : **CP-2018-02-05-01** **Date: 08-02-18**

Sample ID No : 2018-02-05-01 /01

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	402	203	81606	412.8	5.1	5.4
2	401	201	80601	422.9	5.2	
3	404	203	82012	438.7	5.3	
4	403	201	81003	463.1	5.7	
5	400	203	81200	442.8	5.5	
6	401	201	80601	430.6	5.3	
7	402	202	81204	425.7	5.2	
8	401	200	80200	440.3	5.5	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	**Minimum average**	**Minimum Individual units.**
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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TEST REPORT ON PHYSICAL REQUIREMENTS OF SOLID CONCRETE BLOCKS

Lab ID	:	**CP-2018-02-05-01** **Date: 08-02-18**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.
Agency	:	Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045
Customer's Reference	:	EE(Project)YnkZone/WO/75/2017-18
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	05-02-18
Sample ID No	:	2018-02-05-01 /02
Sample Type/Size	:	Solid concrete blocks of size (400X100X200)mm
Reference to BIS codes	:	IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)
Date of test	:	05-02-18

BLOCK DENSITY:

Sl. No.	Measurement of overall Dimensions of Individual Blocks			Overall Volume of the Block in Cubic Centimetres	Weight of Oven Dried Block in Kilograms to the nearest 10 Gram	Block Density in Kg/cum*10^6	Avg.Block Density in (Kg/cum)	As per IS 2185 (Part 1):2005 (RA 2010)
	Length	Breadth	Height					
	mm	mm	mm	(Cm^3)	Kg	Kg/m^3	Kg/m^3	
1	402	101	202	8202	16.510	2013.0	2000.5	Not less than 1800Kg/m^3
2	401	102	203	8303	16.280	1960.7		
3	401	102	201	8221	16.67	2027.7		

WATER ABSORPTION:

Sl. No.	Wet weight after water absorption	Dry weight (Oven dry)	Water Absorption	Avg.Water Absorption	As per IS 2185 (Part 1):2005 (RA 2010)
	kg	kg	%	%	
1	17.630	16.850	4.63	4.50	Shall not be more than 10% by mass
2	17.480	16.950	3.13		
3	17.640	16.680	5.76		

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Lab ID : **CP-2018-02-05-01** **Date: 08-02-18**

Sample ID No : **2018-02-05-01 /02**

DIMENSION ANALYSIS

Sl.no	Length mm	Breadth mm	Height mm	Requirement as per IS 2185(Part 1):2005
1	402	102	202	Length : ± 5mm Breadth : ± 3mm Height : ± 3mm
2	401	103	203	
3	403	102	201	
4	401	100	203	
5	402	102	201	
6	401	103	203	
7	402	100	201	
8	401	101	202	
9	402	103	201	
10	402	102	203	
11	401	103	200	
12	404	102	201	
13	403	103	203	
14	402	102	201	
15	401	103	202	
16	402	102	203	
17	401	103	201	
18	402	102	203	
19	403	103	201	
20	402	102	203	
Average of 20	**402**	**102**	**202**	

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Lab ID : **CP-2018-02-05-01** **Date: 08-02-18**

Sample ID No : 2018-02-05-01 /02

COMPRESSIVE STRENGTH:

Sl. No.	Size of solid block		Area	Failure Load	Compressive strength	Average Compressive strength
	Length	Breadth				
	mm	mm	(mm^2)	(KN)	N/mm^2	(N/mm^2)
1	402	102	41004	178.9	4.4	4.2
2	401	103	41303	166.7	4.0	
3	403	102	41106	180.7	4.4	
4	401	100	40100	151.4	3.8	
5	402	102	41004	180.8	4.4	
6	401	103	41303	178.9	4.3	
7	402	100	40200	170.6	4.2	
8	401	101	40501	174.5	4.3	

As per IS Requirements (Table 2, Clause 5.1, 5.2 and 9.4)

Compressive strength		
Grade	Minimum average	Minimum Individual units.
C (5.0)	5.00 N/mm^2	4.00 N/mm^2
C (4.0)	4.00 N/mm^2	3.20 N/mm^2

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TEST REPORT OF PHYSICAL REQUIREMENTS OF BRICKS

Lab ID	:	**CP-2018-01-29-01** **Date: 04-02-18**
Customer	:	Assistant Executive Engineer, Project Sub Division, BBMP, Bangalore.
Address	:	Project Sub Division, BBMP, Bangalore.
Project Name	:	Package-3 A) Construction of Hospital building at ward No.11, Kuvempunagara. B) Construction of Hospital building at Ward No.07, Byatarayanapura. C) Construction of HOSPITAL Building at Ward No.08, Kodigehalli.
Agency	:	Sri.K.Gopireddy, #3, 1st Cross, 1st Main, Ramachandrappa Layout, Veeranna Palya, Arabic Collager Post, Bangalore-560045
Customer's Reference	:	EE(Project)YnkZone/WO/75/2017-18
Source of sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	29-01-18
Sample ID No	:	2018-01-29-01/01
Identification Mark on Brick	:	SLV Brick
Reference to BIS codes	:	IS 1077 : 1992(RA 2011) Common Burnt Clay Building Bricks-Specification IS 3495 (Part 1 to 3) : 1992(RA 2011) Method of Tests Burnt Clay Building Bricks Part 1:Determination of Compressive Strength, (Cl 4.2.3) Part 2:Determination of Water Absorption,(Cl 4.1.3) Part 3: Determination of Efflorescence, (Cl 4)
Date of test	:	29-01-18

COMPRESSIVE STRENGTH

Sl.No.	Length (mm)	Breadth (mm)	Area (mm^2)	Failure Load (KN)	Compressive strength of individual bricks (N/mm^2)	Acceptablity as per IS 1077:1992, Clause 7.1
1	227.45	108.85	24758	147.7	6.0	The bricks shall have a minimum average compressive strength for various classes as given in Table 1 of IS 1077: 1992. The compressive strength of any individual bricks shall not fall below the minimum compressive strength specified for the corresponding class of brick by more than 15%.
2	228.63	108.41	24786	142.9	5.8	
3	228.47	108.78	24853	141.4	5.7	
4	229.63	109.66	25181	149.6	5.9	
5	224.75	107.58	24179	150.5	6.2	
Average of 5 bricks					**5.9**	

CIVIL PRO BANGALORE Sig..... Date.....